



Panel 1:

Requirements Generation for Total Battlespace Awareness

JAWS 99

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Naval Aviation Systems Team



Requirements Generation



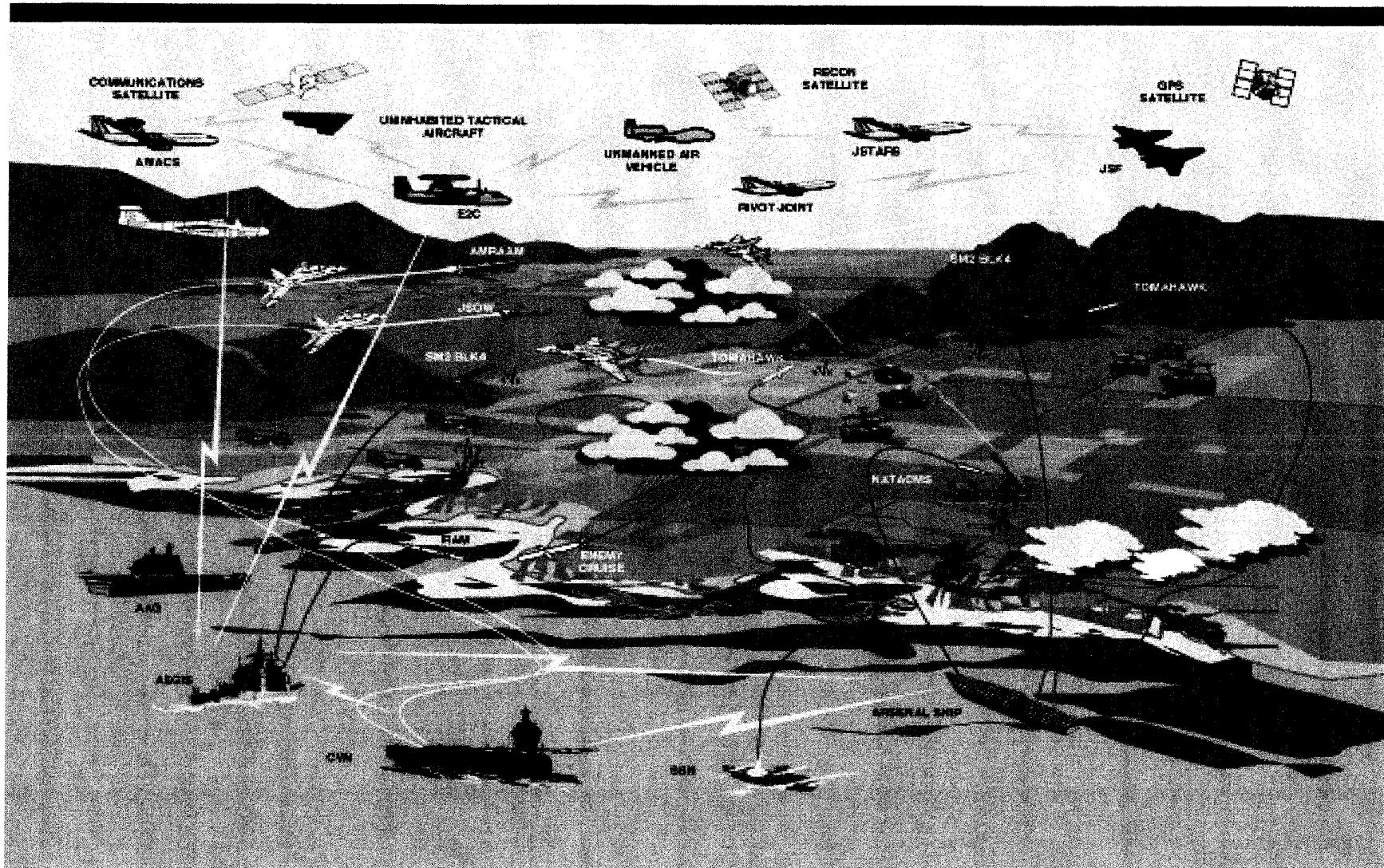
- Know the environment.
- Know your adversary.
- Know your strengths.
- Know your weaknesses.
- Your strengths and weaknesses, arrayed against your adversary's strengths and weaknesses, should reveal your requirements.

"Know the enemy and know yourself; in a hundred battles you will never peril. When you are ignorant of the enemy but know yourself, your chances of winning or losing are equal. If ignorant both of your enemy and of yourself, you are certain in every battle to be in peril."

Sun Tzu, The Art of War, Sixth Century B.C.

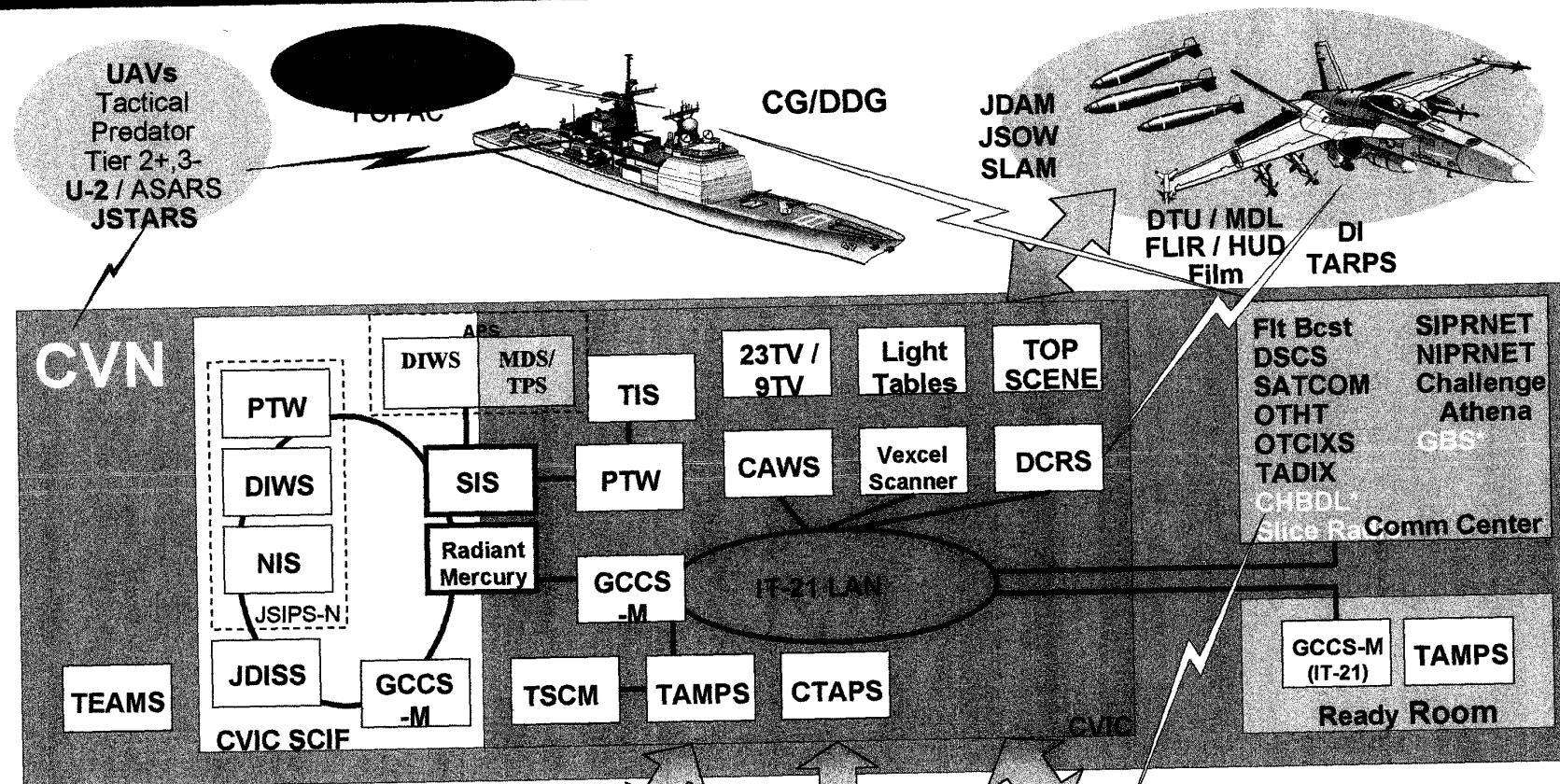


Today's Environment





Current CVIC



————— RF Link
 ————— Future RF Link
 ←→ Footpath
 ————— Network

NSAWC
 Tapes, CD's

DMA
 Tapes, CD's, Charts
 (DPPDB, DTED,
 CADRG, DCW, VOD,
 DFAD)

CMSA
JICPAC
AIC
 Tapes, CD's

SCI
 TS
 GENSER



Emerging Operational Concepts



Emerging Operational Concepts

Information Superiority

Technological
Innovations

Dominant Maneuver

Precision Engagement

Joint Forces

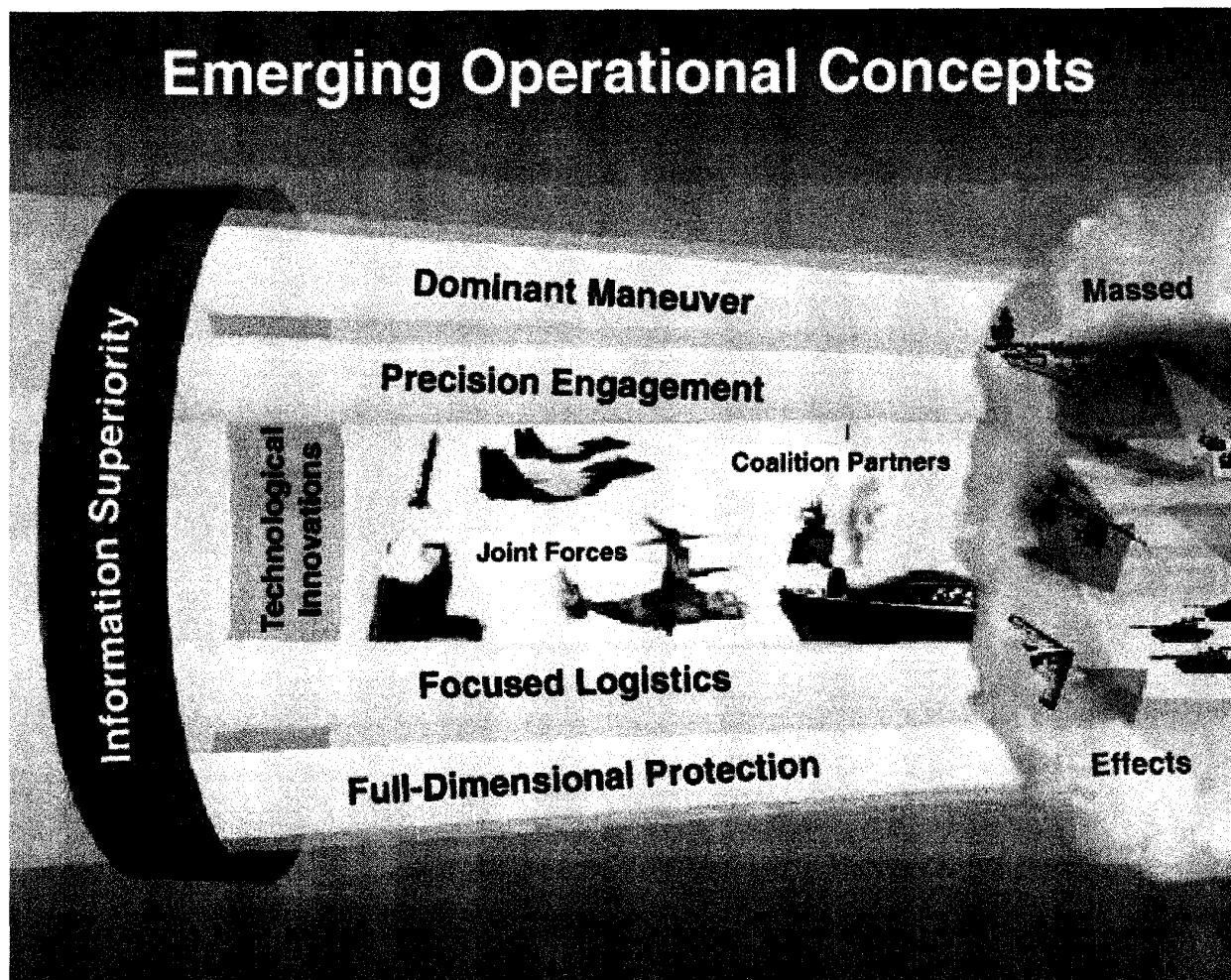
Coalition Partners

Focused Logistics

Full-Dimensional Protection

Massed

Effects





Operational Warfare Drivers

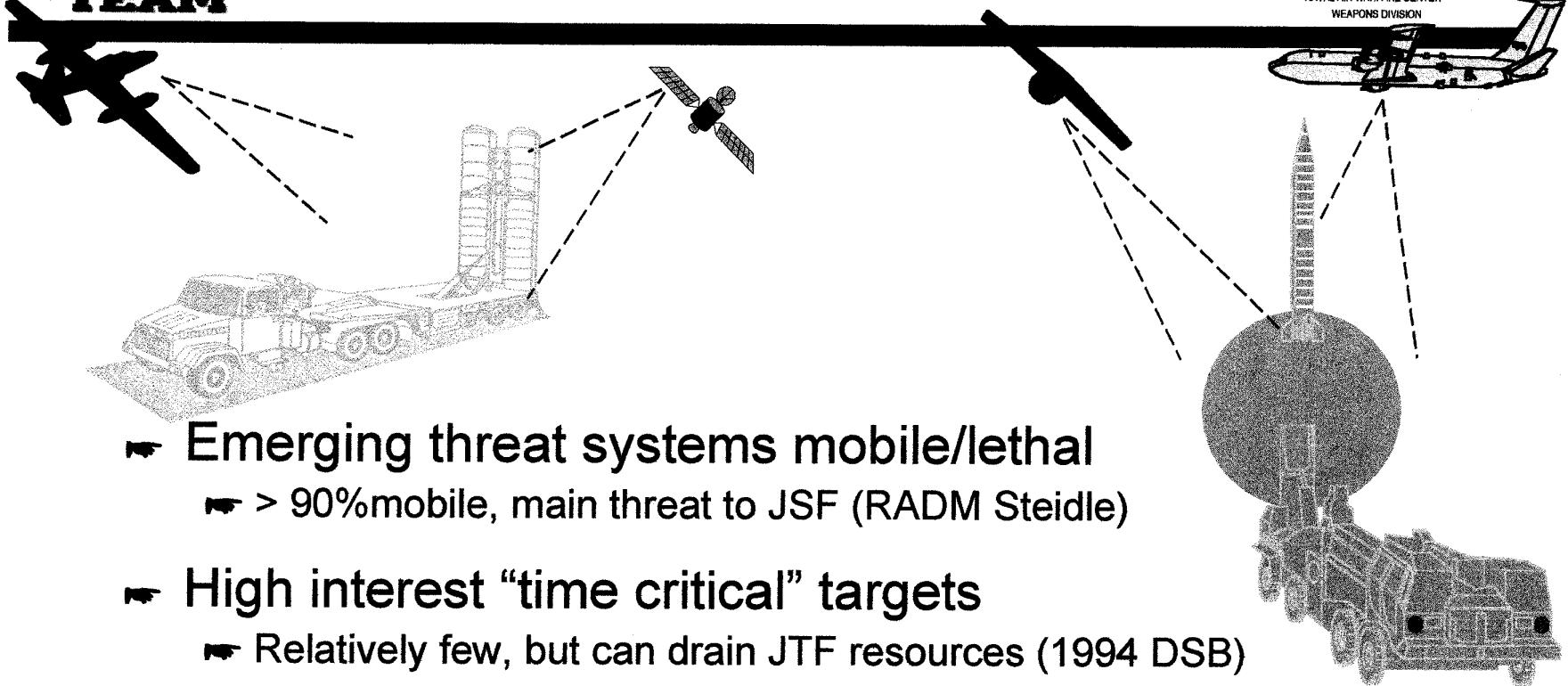


- Aircraft** → Single seat, multi-mission, smart/programmable
- Weapons** → Guided, standoff, autonomous
- Force Structure** → Fewer platforms, people, weapons
- Threat** → Lethal, mobile, electronically agile
- Operational Concepts** → Enable rapid, decisive, low loss victory

Improved planning methods and tools required to meet high information demands of modern strike warfare



Dynamic Mission Environment



- Emerging threat systems mobile/lethal
 - > 90% mobile, main threat to JSF (RADM Steidle)
- High interest “time critical” targets
 - Relatively few, but can drain JTF resources (1994 DSB)
- Battlefield changes dramatically within traditional planning & execution timelines

Mission planning is the pacing function in joint precision interdiction timeliness (1994 DSB)



Network Centric Warfare

Brave New World



- Warfare which derives its power from the robust networking of a well informed but geographically dispersed force, enabled by:
 - Highly webbed information services
 - Timely access to all relevant and appropriate information sources
 - Value-added, automated command and control processes (to include high speed automated assignment of resources to need)
 - Integrated sensors hosted on the information network and closely coupled in time to the shooters and command and control processes
 - Weapons reach with precision and speed of response

Source: VADM Cebrowski, President, Naval War College, October 1998



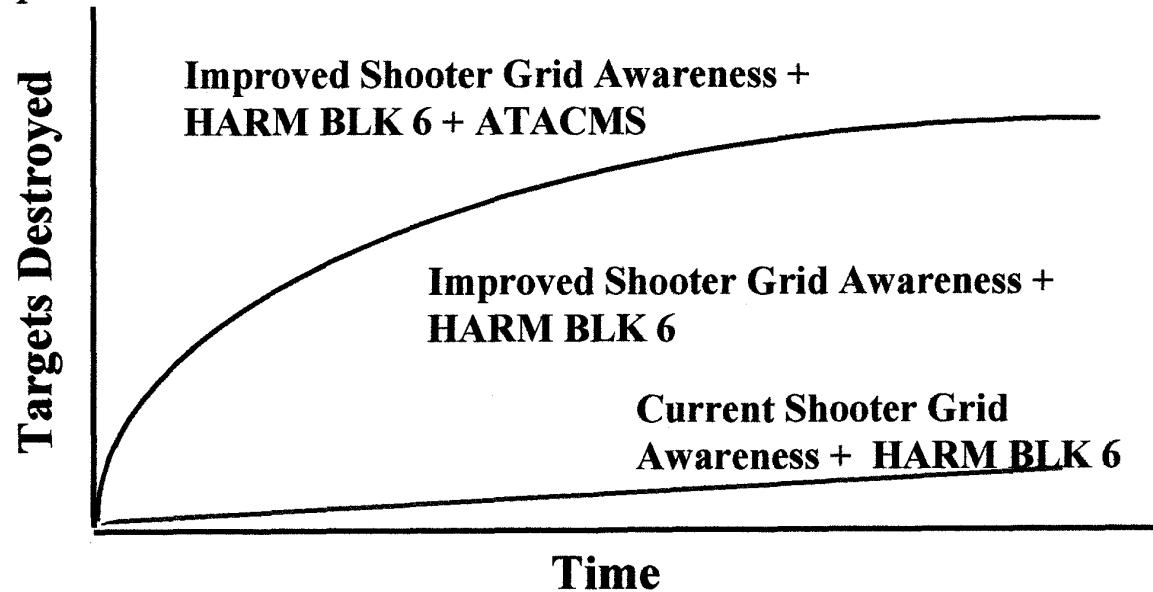
Network Centric Warfare Increases Joint Combat Power



Results for Precision Engagement

- **Operational Impact**

- Dramatic Early Results
- Greatest Rates of Change in Initial Phase of a Campaign
- Inflicts Maximum Losses on the Enemy
- Shortens Timelines
- Locks out Enemy Options





Network Centric Warfare Integrated Planning & Execution



Time-critical-target/mobile
SAM targeting data linked to
Afloat AOC

National sensor updates mission
planning threat data base\cues
JSTARS via TRAP

UAV passes time-critical-
target location to JSTARS

Mobile SAM engaged
using JSTARS
targeting

JFACC Afloat real-time tactical picture
enables sensor-to-shooter retasking &
situational awareness updates

Mission plan update, JSOW
targeting data, threat avoidance
routing relayed to TACAIR

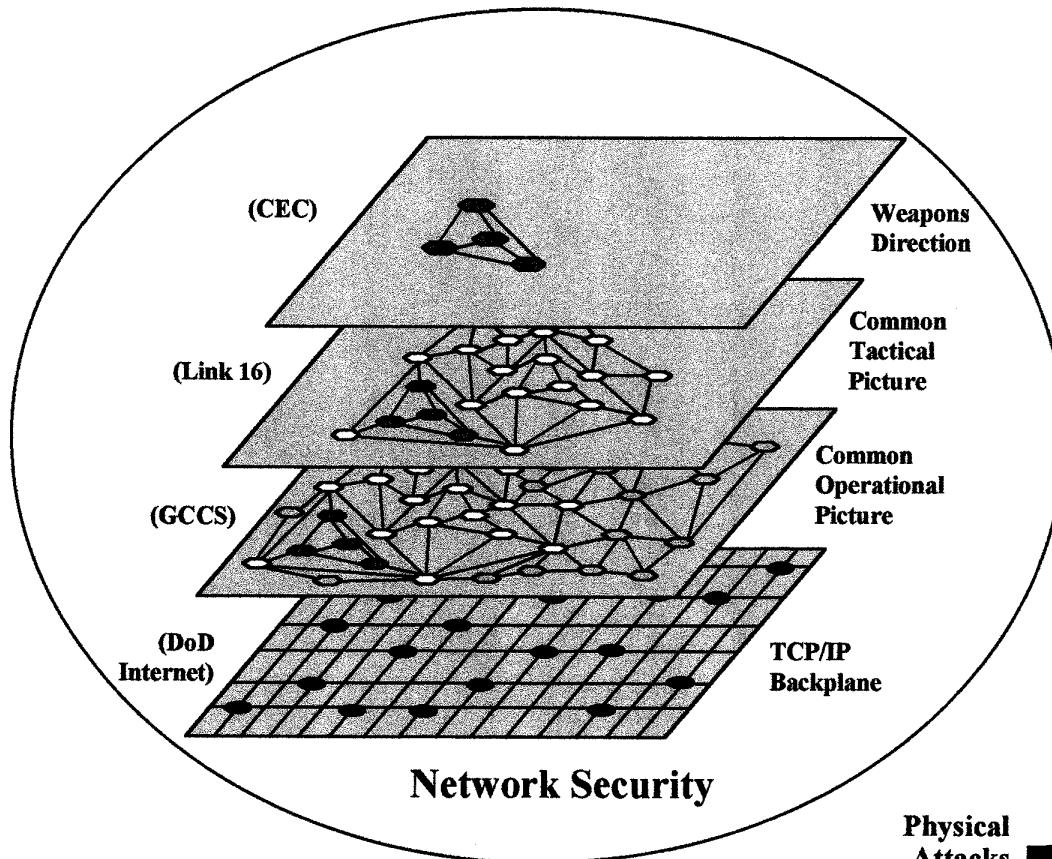
**Time-critical-targets/advanced mobile threats demand
integration of theater sensor data into real-time battle
management and mission plan updates**



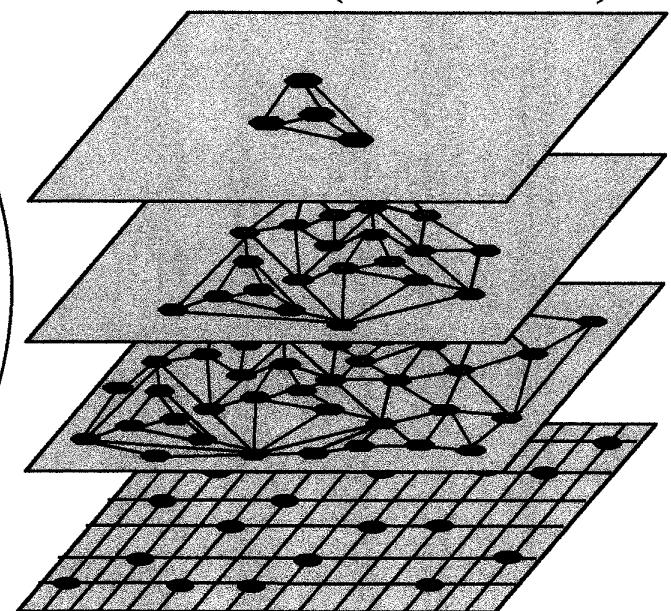
Information Warfare



Friendly Systems (IW Protect)



Enemy Systems (IW Attack)





Scope of Land Attack Targeting 2010



Missions (day, night, wx)

Strike
Air - Ground
Surface - Surface (NSFS)
SEAD

Sensors

NTM
Manned A/C
UAV's
Troops
UGS's

Launch

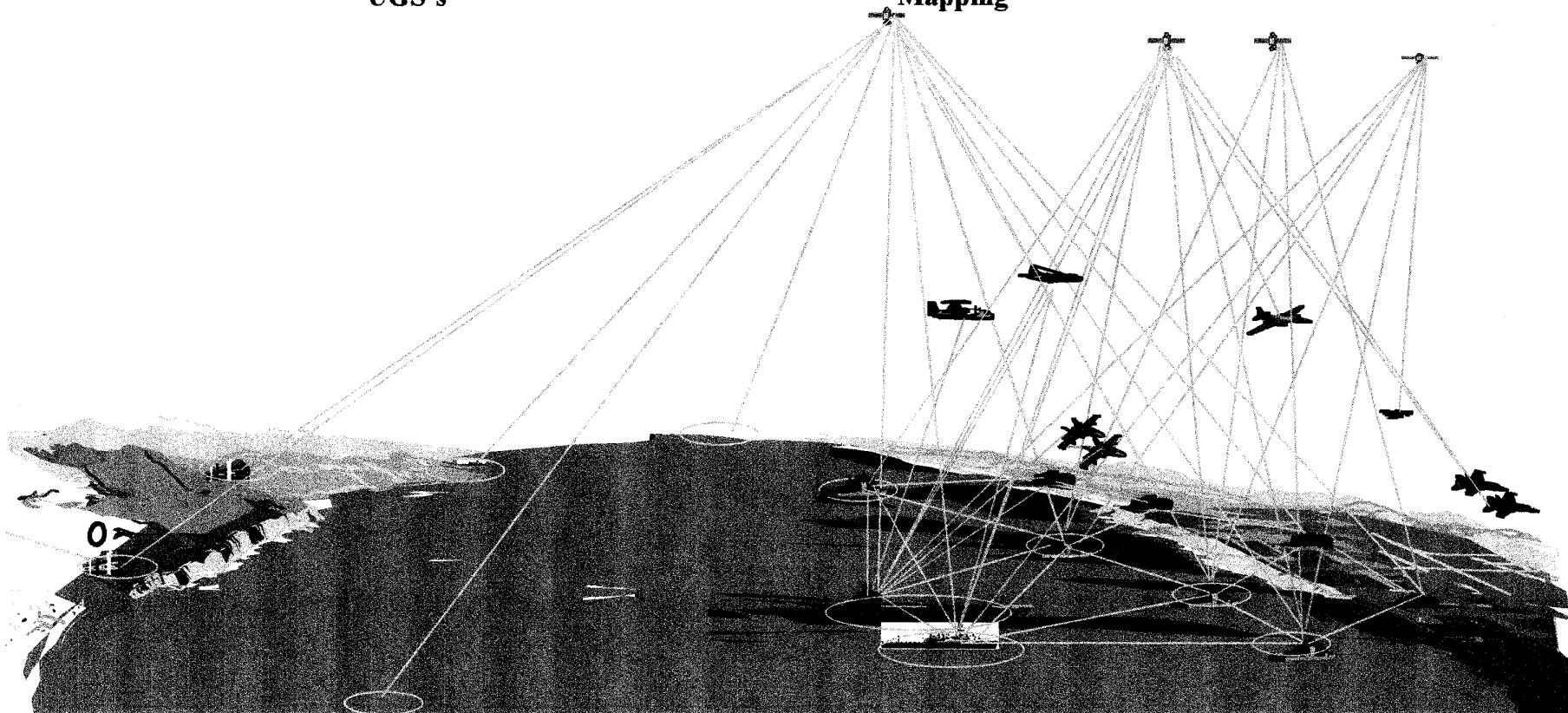
Platforms
Manned A/C
UCAV's
DDG's/SSN's

Weapons (to 600nm)

Unguided
Guided
INS/GPS-only
Terminal Sensor
Mapping

Targets

Soft, Hard, Buried, Camo'd
Fixed, Relocatable, Mobile,
Moving, TCT's
Point, Array

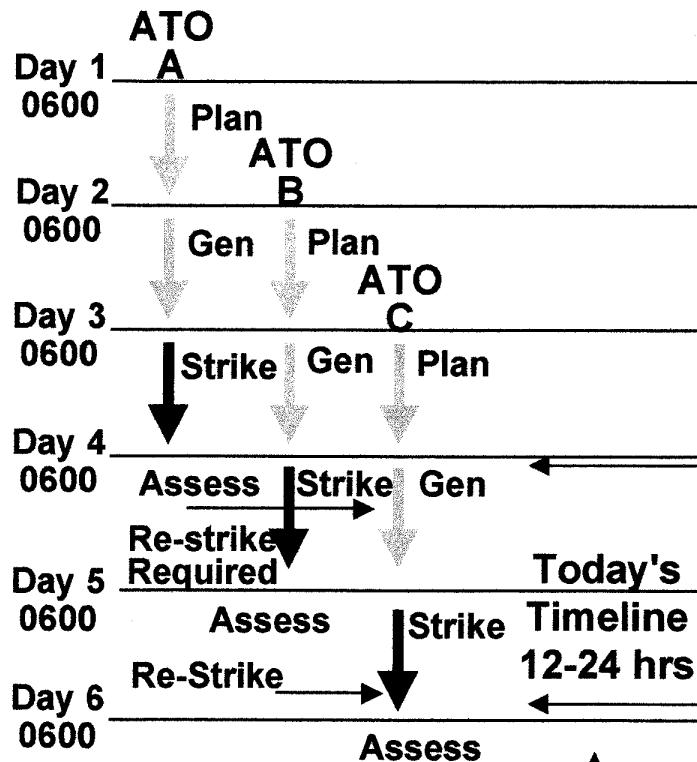




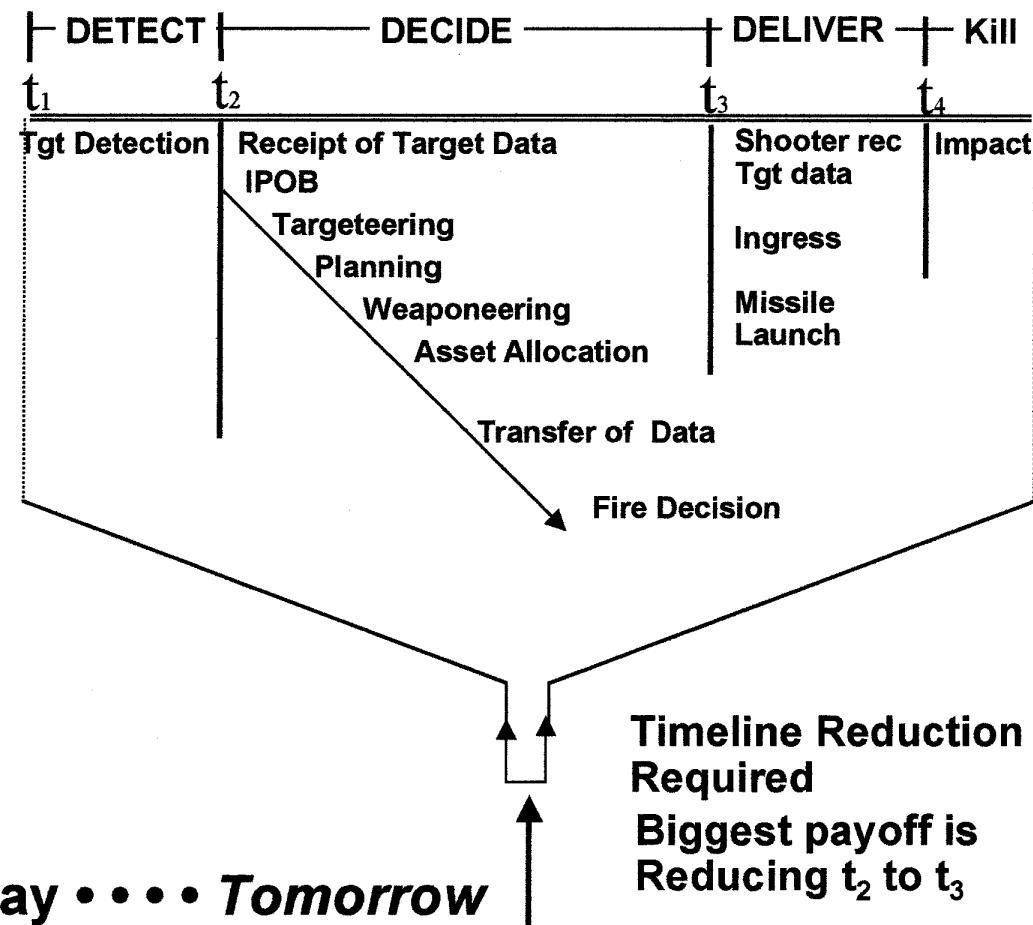
Strike Timeline



CURRENT STRIKE TIMELINE



NEED: COMPRESS "THE TIMELINE"





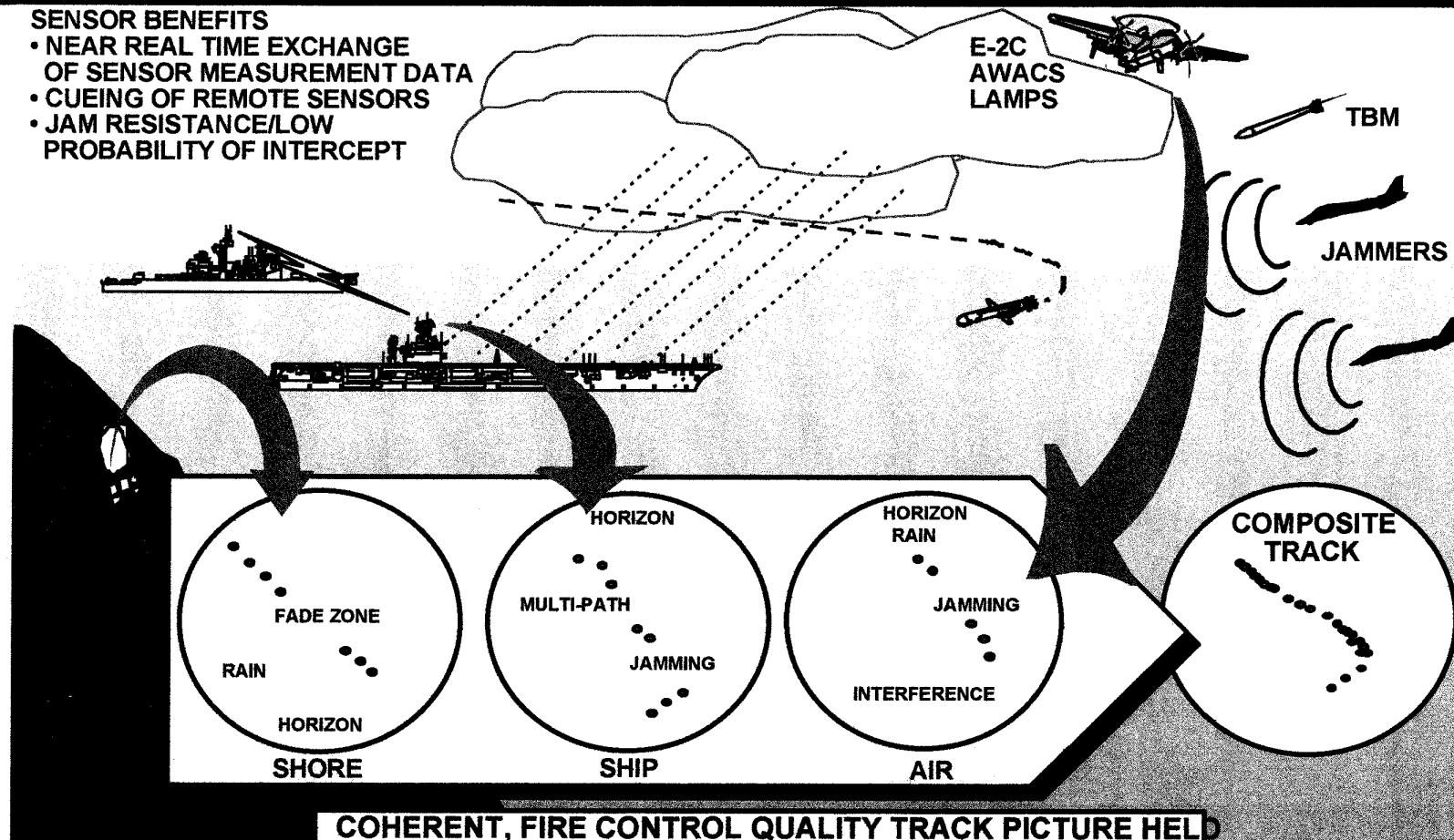
TEAM

Cooperative Engagement Capability



SENSOR BENEFITS

- NEAR REAL TIME EXCHANGE OF SENSOR MEASUREMENT DATA
- CUEING OF REMOTE SENSORS
- JAM RESISTANCE/LOW PROBABILITY OF INTERCEPT



COHERENT, FIRE CONTROL QUALITY TRACK PICTURE HELD
BY ALL UNITS IN A COMMON, SHARED DATA BASE



The Future: Seamless Integration

